GCSE Maths: Exam-Style Booklet

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This exam booklet covers topics intended for the 2024 iGCSE exam diet. It is still largely suitable for students on other exam boards. For solutions and marking email fredserdickinson@gmail.com. Good luck!

The exercises in this booklet are *not* original. They have been taken from past exams, labeled clearly at the beginning of each question.

Give your solutions on a separate piece of paper or digital notebook. Attempt to answer all questions and make your workings clear. You may use a calculator.

1. *(iGCSE Nov. 2021; Paper 1, Question 6)* (5)
   Alison buys 5 apples and 3 pears for a total cost of \$1.96.
   Greg buys 3 apples and 2 pears for a total cost of \$1.22.

   Michael buys 10 apples and 10 pears. Work out how much Michael pays, showing your working clearly.

2. *(iGCSE Nov. 2021; Paper 1, Question 11)*
   The following table gives information about the times taken by 90 runners to complete a 10km race.

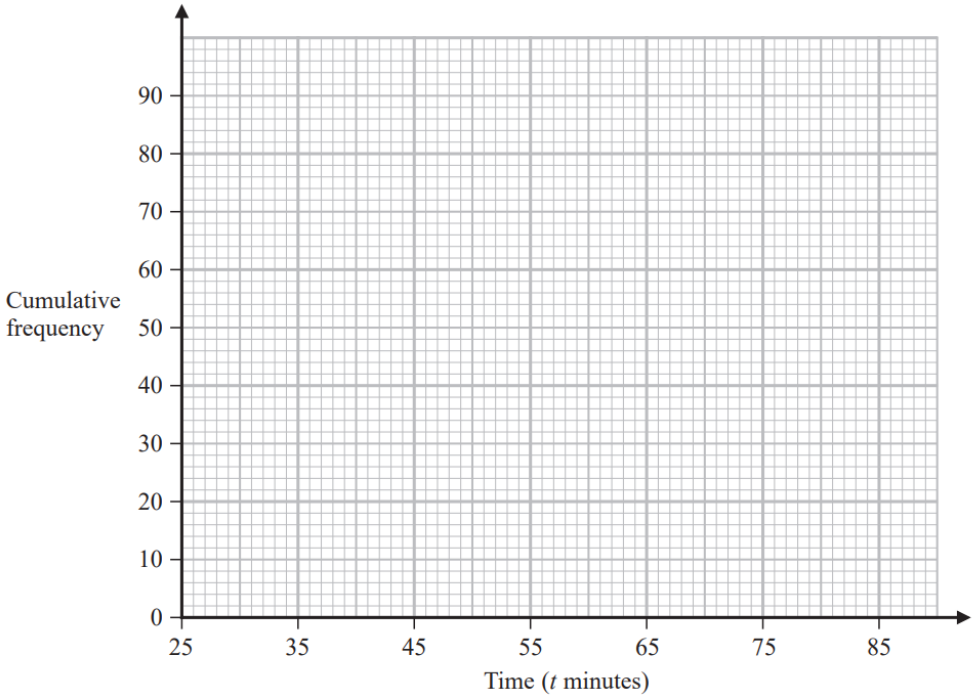
Time (t minutes)	Frequency
$25 < t \leqslant 35$	12
$35 < t \leqslant 45$	24
$45 < t \leqslant 55$	28
$55 < t \leqslant 65$	12
$65 < t \leqslant 75$	10
$75 < t \leqslant 85$	4

   (a) Complete the cumulative frequency table below. (1)

(b) On the grid below, draw a cumulative frequency graph for your table. (2)

(c) Any runner who completed the race in a time T minutes such that $42 < T \leq 52$ was awarded a silver medal. Use your graph to find an estimate for the number of runners who were awarded a silver medal. (2)

Time (t minutes)	Cumulative frequency
$25 < t \leqslant 35$	12
$25 < t \leqslant 45$	
$25 < t \leqslant 55$	
$25 < t \leqslant 65$	
$25 < t \leqslant 75$	
$25 < t \leqslant 85$	



3. *(iGCSE Nov. 2021; Paper 1, Question 15)*
Magnus and Garry play 2 games of chess against each other.
The probability that Magnus beats Garry in any game is $\frac{2}{9}$ and the probability that they draw is $\frac{4}{9}$. The result of any game is independent from any other.

For each game of chess, winners get 2 points and losers get 0 points. If it is a draw, then each player gets 1 point.

(a) Create a probability tree diagram for Magnus and Garry playing two games of chess. (3)

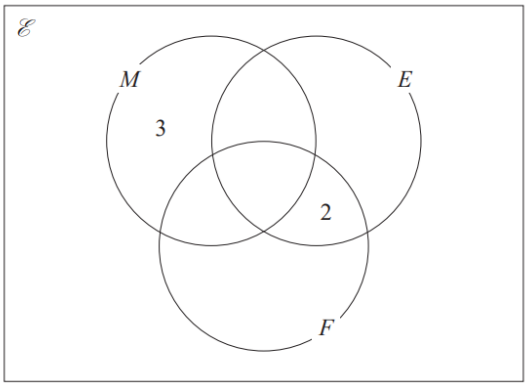
(b) Find the probability that, after 2 games, Magnus and Garry have the same number of points. (3)

(c) Magnus and Garry now play a third game of chess. What is the probability that they have the same number of points after three games? (3)

4. *(iGCSE Nov. 2021; Paper 1, Question 16)*
There are 32 students in a class.
In one term these 32 students each took a test in Maths (M), English (E) and French (F).

25 students passed Maths.
20 students passed English.
14 students passed French.
18 students passed Maths and English.
11 students passed Maths and French.
4 students failed all three tests.
x students passed all three tests.

The incomplete Venn diagram below gives some more information.



(a) Using the information given, find x. (2)

(b) Complete the Venn diagram. (2)

(c) A student who passed the test in Maths is chosen at random. Find the probability that this student failed the test in French. (1)

5. *(iGCSE Nov. 2021; Paper 1, Question 20)* (7)
The straight line L passes through points $A(-6, 2)$ and $B(5, 3)$.
The straight line M is perpendicular to L and passes through the midpoint of A and B. It also intersects the line $x = -1$ at point C.

Calculate the area of triangle ABC.

6. *(iGCSE Nov. 2021; Paper 2, Question 3)*
The table gives information about the amounts of money, in euros, that 70 of Anjali's friends spent last Saturday.

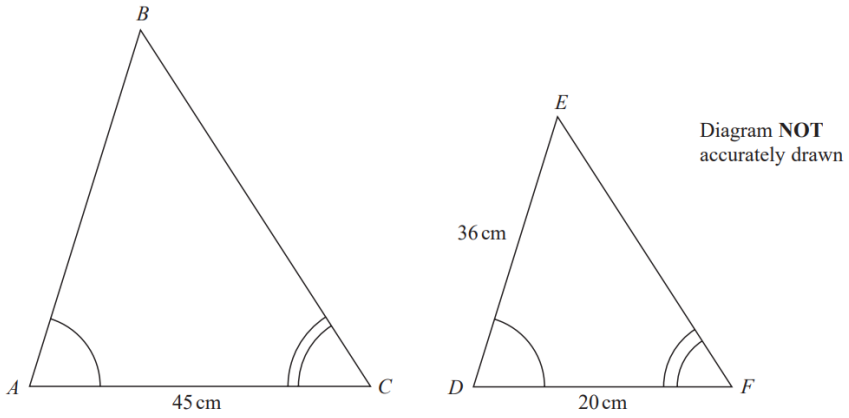
Money spent (S euros)	**Frequency**
$0 < S \leqslant 8$	6
$8 < S \leqslant 16$	14
$16 < S \leqslant 24$	19
$24 < S \leqslant 32$	25
$32 < S \leqslant 40$	6

One of Anjali's 70 friends is going to be chosen at random.

(a) Find the probability that this friend spent more than 24 euros. (1)

(b) Work out an estimate for the mean amount of money spent by Anjali's friends last Saturday. Give your answer correct to 2 decimal places. (4)

7. *(iGCSE Nov. 2021; Paper 2, Question 4)*
The figure below shows two similar triangles ABC and DEF.



(a) Work out the length of AB. (2)

(b) Given that $BC = 54$cm, work out the length of EF. (2)

8. *(iGCSE Nov. 2021; Paper 2, Question 9)*
A rainwater tank contains 2.4×10^7 raindrops. The same tank also contains 1.75×10^6 bacteria.

(a) Work out the number of bacteria per raindrop in the tank. Give your answer in standard form correct to 2 significant figures. (3)

A drop of rainwater contains 5.01×10^{21} atoms.
In a drop of rainwater the number of atoms is 3 times the number of molecules.

(b) Work out the number of molecules in the rainwater tank.
Give your answer in standard form correct to one significant figure. (2)

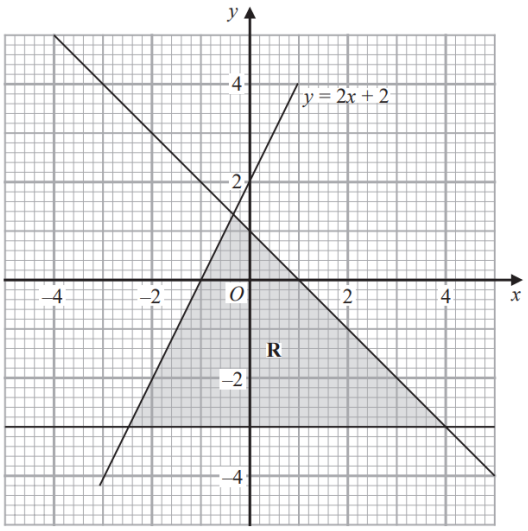
9. *(iGCSE Nov. 2021; Paper 2, Question 12)*

(a) Simplify $(64p^9q^{12})^{\frac{2}{3}}$. (2)

(b) Write $\frac{2}{3x} + \frac{4}{5x} - \frac{9}{10x}$ as a single fraction in its simplest form. (2)

(c) Expand and simplify $4x(x-5)(2x+3)$ showing your working clearly. (3)

10. *(iGCSE Nov. 2021; Paper 2, Question 13)* (3)
The figure below shows the region R bounded by three straight lines.
Write down three inequalities that define R.



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